

# 354 Celiac Disease

## Definition/Cut-off Value

Celiac Disease (CD) is an autoimmune disease precipitated by the ingestion of gluten (a protein in wheat, rye, and barley) that results in damage to the small intestine and malabsorption of the nutrients from food. (1). (For more information about the definition of CD, please see the Clarification section)

CD is also known as:

- Celiac Sprue
- Gluten-sensitive Enteropathy
- Non-tropical Sprue

Presence of condition diagnosed, documented, or reported by a physician or someone working under a physician's orders, or as self reported by applicant/participant/caregiver. See Clarification for more information about self-reporting a diagnosis.

## Participant Category and Priority Level

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V, or VI
Infants	I
Children	III

## Justification

CD affects approximately 1% of the U.S. population (2, 3). CD can occur at any age and the treatment requires strict adherence to a gluten-free diet for life. CD is both a disease of malabsorption and an abnormal immune reaction to gluten. When individuals with CD eat foods or ingest products containing gluten, their immune system responds by damaging or destroying villi—the tiny, fingerlike protrusions lining the small intestine. Villi normally allow nutrients from food to be absorbed through the walls of the small intestine into the bloodstream (4). The destruction of villi can result in malabsorption of nutrients needed for good health. Key nutrients often affected are iron, calcium and folate as they are absorbed in the first part of the small intestine. If damage occurs further down the small intestinal tract, malabsorption of carbohydrates (especially lactose), fat and fat-soluble vitamins, protein and other nutrients may also occur (2,5).

In addition to the gastrointestinal system, CD affects many other systems in the body, resulting in a wide range and severity of symptoms. Symptoms of CD may include chronic diarrhea, vomiting, constipation, pale foul-smelling fatty stools and weight loss. Failure to thrive may occur in infants and children. The vitamin and mineral deficiencies that can occur from continued exposure to gluten may result in conditions such as anemia, osteoporosis and neurological disorders such as ataxia, seizures and neuropathy.

Individuals with CD who continue to ingest gluten are also at increased risk for developing other autoimmune disorders (e.g., thyroid disease, type 1 diabetes, Addison's disease) and certain types of cancer, especially gastrointestinal malignancies (2).

Continued exposure to gluten increases the risk of miscarriage or having a low birth weight baby, and may result in infertility in both women and men. A delay in diagnosis for children may cause serious nutritional complications including growth failure, delayed puberty, iron-deficiency anemia, and impaired bone health. Mood swings or depression may also occur (2, 6). See Table 1 for Nutritional Implications and Symptoms.

**Table 1. Nutritional Implications and Symptoms of CD**

Common in Children
<p><i>Digestive Symptoms</i>-more common in infants and children, may include</p> <ul style="list-style-type: none"> <li>• vomiting</li> <li>• chronic diarrhea</li> <li>• constipation</li> <li>• abdominal bloating and pain</li> <li>• pale, foul-smelling, or fatty stool</li> </ul>
<p><i>Other Symptoms</i>-</p> <ul style="list-style-type: none"> <li>• delayed puberty</li> <li>• dental enamel abnormalities of the permanent teeth</li> <li>• failure to thrive (delayed growth and short stature)</li> <li>• weight loss</li> <li>• irritability</li> </ul>
Common in Adults
<p><i>Digestive Symptoms</i>- same as above, less common in adults</p>
<p><i>Other Symptoms</i>- adults may instead have one or more of the following:</p> <ul style="list-style-type: none"> <li>• unexplained iron-deficiency anemia</li> <li>• other vitamin and mineral deficiencies (A, D, E, K, calcium)</li> <li>• lactose intolerance</li> <li>• fatigue</li> <li>• bone or joint pain</li> <li>• arthritis</li> <li>• depression or anxiety</li> <li>• tingling numbness in the hands and feet</li> <li>• seizures</li> <li>• missed menstrual periods</li> <li>• infertility (men and women) or recurrent miscarriage</li> <li>• canker sores inside the mouth</li> <li>• itchy skin rash- dermatitis herpetiformis</li> <li>• elevated liver enzymes</li> </ul>

**Table 1. Nutritional Implications and Symptoms of CD**

Sources:

Case, Shelley, Gluten-Free Diet, A Comprehensive Resource Guide, Case Nutrition Consulting Inc., 2008.

National Institute of Diabetes and Digestive and Kidney Diseases, Celiac Disease, NIH Publication No. 08-4269 September 2008.) <http://digestive.niddk.nih.gov/ddiseases/pubs/ceeliac/#what>. Accessed May 2012.

The risk for development of CD depends on genetic, immunological, and environmental factors. Recent studies suggest that the introduction of small amounts of gluten while the infant is still breast-fed may reduce the risk of CD. Both breastfeeding during the introduction of dietary gluten, and increasing the duration of breastfeeding were associated with reduced risk in the infant for the development of CD. It is not clear from studies whether breastfeeding delays the onset of symptoms or provides a permanent protection against the disease. Therefore, it is prudent to avoid both early (<4 months) and late (≥7 months) introduction of gluten and to introduce gluten gradually while the infant is still breast-fed, as this may reduce the risk of CD. (7)

The only treatment for CD is a gluten-free diet. Individuals with CD should discuss gluten-free food choices with a dietitian or physician that specializes in CD. Individuals with CD should always read food ingredient lists carefully to make sure that the food does not contain gluten. Making informed decisions in the grocery stores and when eating out is essential for the successful treatment of the disease (5, 8).

### Implications for WIC Nutrition Services

Through client-centered counseling, WIC staff can assist participants with CD in making gluten-free food choices that improve quality of life and promote nutritional well-being. WIC can provide nutrition education/counseling on alternatives to gluten-containing food products as well as provide gluten-free grain selections available in the WIC food packages. Based on the needs and interests of the participant, WIC staff may (as appropriate):

- Promote breastfeeding throughout the first year of life, with exclusive breastfeeding until 4-6 months of age.
- In consultation with the guidance of a medical provider, introduce gluten-containing foods between 4 and 6 months to infants at risk of CD, including infants with a parent or sibling with CD.
- Tailor food packages to substitute or remove gluten-containing foods.
- Educate participants on meeting nutritional needs in the absence of gluten-containing foods.
- Encourage high fiber, gluten-free grain selections.
- Monitor participant's growth pattern and weight status.
- Educate participants on planning gluten-free meals and snacks for outside the home.
- Provide educational materials outlining allowed foods and foods to avoid, for example:
  - <http://www.celiac.nih.gov/Default.aspx>. Accessed May 2012.
  - <http://www.naspghan.org/user-assets/Documents/pdf/diseaseInfo/GlutenFreeDietGuide-E.pdf>. Accessed May 2012.
- Provide referrals as appropriate.

## References

1. National Institute of Allergy and Infectious Disease. Food allergy: an overview. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, 2010 (NIH Publication No. 11-5518). Available at: <http://www.niaid.nih.gov/topics/foodallergy/understanding/pages/whatisit.aspx>. Accessed May 2012.
2. Case, S. Gluten-free diet: A comprehensive resource guide. Case Nutrition Consulting Inc., 2008.
3. Green, PHR, Cellier, C. Medical progress-celiac disease. The New England Journal of Medicine. 2007 Oct 25:1731-1743.
4. National Institute of Diabetes and Digestive and Kidney Diseases, Celiac Disease, National Institute of Health. Celiac disease. Available at: <http://digestive.niddk.nih.gov/ddiseases/pubs/celiac/#what> Accessed May 2012.
5. National Institute of Diabetes and Digestive and Kidney Diseases, Celiac Disease, NIH Publication No. 08-4269 September 2008.
6. Guideline for the Diagnosis and Treatment of Celiac Disease in Children: Recommendation of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. J Pediatr Gastroenterol Nutr. 2005 Jan;40(1):1-19.
7. ESPGHAN Committee on Nutrition: Agostoni, C. et al. Complementary feeding: A commentary by the ESPGHAN Committee on Nutrition, Medical Position Paper. Journal of Pediatric Gastroenterology and Nutrition, January 2008: 46:99-110.
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10. Boyce, J. et al. Guidelines for the diagnosis and management of food allergy in the United States: Report of the NIAID-Sponsored Expert Panel. Journal of Allergy and Clinical Immunology. 2010; 126(6):S1-S58. [http://www.jacionline.org/article/S0091-6749\(10\)01566-6/fulltext](http://www.jacionline.org/article/S0091-6749(10)01566-6/fulltext). Accessed May 2012.

## Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”) should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

The 2006 American Gastroenterological Association (AGA) Institute Technical Review on the Diagnosis and Management of Celiac Disease refers to CD as “a unique disorder that is both a food intolerance and autoimmune disorder” (9). According to the 2010 NIAID-Sponsored Expert Panel definition, CD is a non-IgE mediated food allergy (10). (See nutrition risk criterion #353, *Food Allergy*.) However, the Expert Panel did

not include information about CD in its report but rather refers readers to existing clinical guidelines on CD, including the AGA Institute's Technical Review. (5 9,10)

